

Abstract of the Disclosure

The present invention is related to a method for fabricating a transistor with a polymetal gate electrode structure. The method includes the steps of: forming a
5 gate insulation layer on a substrate; forming a patterned gate stack structure on the gate insulation layer, wherein the patterned stack structure includes a polysilicon layer as a bottom layer and a metal layer as an upper layer;
10 forming a silicon oxide-based capping layer along a profile containing the patterned gate stack structure and on the gate insulation layer at a predetermined temperature that prevents oxidation of the metal layer; and performing a gate re-oxidation process.